



[4910-13-P]

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2011-0027; Directorate Identifier 2010-NM-127-AD; Amendment 39-18543; AD 2016-11-16]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for certain The Boeing Company Model 777-200 and -300 series airplanes equipped with Rolls-Royce Model RB211-Trent 800 engines. This AD was prompted by reports of thrust reverser (T/R) events related to thermal damage of the T/R inner wall. Depending on the airplane configuration, this AD requires a records review and applicable repetitive inspections, replacements, and installations of the T/R inner wall; and related investigative and corrective actions if necessary. This AD also requires installation of serviceable T/R halves, which would terminate the repetitive actions. This AD also requires revising the inspection or maintenance program by incorporating new airworthiness limitations. We are issuing this AD to detect and correct a degraded T/R inner wall panel. A degraded T/R inner wall panel could lead to failure of the T/R and adjacent components and their consequent separation from the airplane, which could result in a rejected takeoff (RTO) and cause asymmetric thrust and consequent loss of control of the airplane during reverse thrust operation. If a T/R inner wall overheats, separated components could cause structural damage to the airplane, damage to other airplanes, or possible injury to people on the ground.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone: 206-544-5000, extension 1; fax: 206-766-5680; Internet: <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2011-0027.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2011-0027; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Kevin Nguyen, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6501; fax: 425-917-6590; email: [kevin.nguyen@faa.gov](mailto:kevin.nguyen@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a supplemental notice of proposed rulemaking (SNPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 777-200 and -300 series airplanes equipped with Rolls-Royce Model RB211-Trent 800 engines. The SNPRM published in the Federal Register on September 25, 2015 (80 FR 57744) (“the SNPRM”). We preceded the SNPRM with a notice of proposed rulemaking (NPRM) that published in the Federal Register on January 20, 2011 (76 FR 3561) (“the NPRM”). The NPRM proposed to require repetitive inspections for degradation of T/R structure and sealant, and related investigative and corrective actions if necessary. The NPRM was prompted by reports of T/R events related to thermal damage of the T/R inner wall. The SNPRM proposed to revise the NPRM by adding different repetitive inspection requirements for T/R halves with a thermal protective system installed. The SNPRM also proposed to revise the NPRM by requiring installation of serviceable T/R halves, which would terminate the repetitive inspections. The SNPRM also proposed to revise the inspection or maintenance program by incorporating new airworthiness limitations. We are issuing this AD to detect and correct a degraded T/R inner wall panel. A degraded T/R inner wall panel could lead to failure of the T/R and adjacent components and their consequent separation from the airplane, which could result in an RTO and cause asymmetric thrust and consequent loss of control of the airplane during reverse thrust operation. If a T/R inner wall overheats, separated components could cause structural damage to the airplane, damage to other airplanes, or possible injury to people on the ground.

## **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the SNPRM and the FAA's response to each comment.

### **Request to Change Compliance Reference**

Boeing requested that we revise paragraph (k)(2) of the proposed AD (in the SNPRM) by adding "table 5" to the reference to the Compliance paragraph in Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015. Boeing stated that this change would be consistent with how paragraph (k)(1) of the proposed AD (in the SNPRM) refers to the Compliance paragraph.

We agree with the commenter's request for the reason provided. We have revised paragraph (k)(2) of this AD accordingly.

### **Request to Modify Alternative Method of Compliance (AMOC) Statement**

Boeing requested that the AMOC statement specified in paragraph (r)(3) of the proposed AD (in the SNPRM) be revised by adding a sentence to allow an AMOC for the serviceable T/R assembly to be transferred to other airplanes. Boeing stated that an AMOC provided for a repaired and serviceable unit is able to be attached to and travel with the repaired unit. Boeing added that a serviceable unit is a rotatable part and can be installed on multiple airplanes during the life of the unit. Boeing noted that paragraph (l)(3) of AD 2015-19-16, Amendment 39-18278 (80 FR 59570, October 2, 2015) contains language similar to the requested language.

We disagree with the request because we are now able to issue an AMOC that applies to multiple products operated by a single operator (commonly referred to as a fleet AMOC). This procedure allows AMOCs to address rotatable parts. We have not changed this AD in this regard.

### **Request to Update Service Information**

Boeing requested that the revision date of Boeing 777 Maintenance Planning Data (MPD) Document Section 9, Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D622W001-9, Revision dated October 2014, be updated to reflect the latest FAA-approved revision. Boeing stated that AWL 78-AWL-01, Thrust Reverser Thermal Protection System, was revised recently to include Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014, in the applicability note of the AWL.

We agree to reference the most recent revision of Boeing 777 MPD Document Section 9, AWLs and CMRs, D622W001-9 (which is referred to as Temporary Revision (TR) 09-030, Revision dated November 2015, on MyBoeingFleet.com), because the new applicability note clarifies that AWL 78-AWL-01 applies to T/R halves on which the actions specified in Boeing Alert Service Bulletin 777-78A0094 have been done. As a result, we have revised the introductory text to paragraph (n) of this AD accordingly. We have also added a new paragraph (p)(5) to this AD to provide credit for accomplishing the revision required by paragraph (n) of this AD using Boeing 777 MPD Document, Section 9, AWLs and CMRs, D622W001-9, Revision dated October 2014.

### **Request to Modify Initial Inspection**

Boeing requested that paragraph (n)(1) of the proposed AD (in the SNPRM) be revised to allow deferral of the initial inspection for AWL 78-AWL-01, Thrust Reverser Thermal Protection System. Boeing stated that the compliance time should be 1,125 days or 6,000 flight cycles, whichever occurs first, after the last inspection for AWL 78-AWL-01, Thrust Reverser Thermal Protection System, “for T/Rs that have already incorporated 78-AWL-01.” Boeing stated that when the AD becomes effective, T/R halves on which Boeing Alert Service Bulletin 777-78A0094 and AWL 78-AWL-01, Thrust Reverser Thermal Protection System, have been incorporated are not subject to

the inspections specified in paragraph (i) of the proposed AD (in the SNPRM) and should not be required to do the inspection required by AWL 78-AWL-01 concurrent with the next inspection required by paragraph (i) of this AD or within 30 days after the effective date of this AD, whichever occurs later.

We agree with allowing deferral of the initial inspection for AWL 78-AWL-01, Thrust Reverser Thermal Protection System, for the reasons provided by the commenter. We have revised the compliance time for AWL 78-AWL-01, Thrust Reverser Thermal Protection System, as requested by the commenter. We have revised the introductory text to paragraph (n), and reformatted and revised paragraphs (n)(1) and (n)(2) of this AD, to accommodate the commenter's request. We clarified the affected airplanes for the compliance as specified in paragraph (n)(1) of this AD by stating, "For airplanes on which any inspections required by paragraph (i) of this AD are done." We clarified the affected airplanes for the compliance as specified in paragraph (n)(2) of this AD by stating, "For airplanes on which the installation required by paragraph (l) of this AD is done."

#### **Request to Review Inspection Methods**

American Airlines requested that the FAA review the inspection methods and instructions required in paragraph (i) of the proposed AD (in the SNPRM) when doing a nondestructive test (NDT) inspection for delaminations and disbonds; and ensuring false positive findings are prevented or minimized. American Airlines stated that they inspected eight T/R inner walls in accordance with paragraph (i)(1) of the proposed AD (in the SNPRM) and found disbonded material. American Airlines stated that after they contacted the original equipment manufacturer (OEM) and re-inspected, several units were determined to be false positives. American Airlines surmised that the instructions or possible training for inspections may not be sufficient.

We acknowledge the commenter's concern. However, we have determined the NDT inspections for disbonds and damage required in paragraph (i) and associated service information produce reliable inspection results and adequately detect disbonds and damage. Through technical discussion with the OEM, we understand that the false positive indications were a result of a maintenance vendor using a non-OEM inspection manual that had a faulty NDT inspection standard. We have not revised this AD in this regard.

#### **Request to Review Airworthiness Limitation Inspection Procedures**

American Airlines stated it had a T/R inner wall that required repair, but the damage would not have been detected by the inspection specified in Airworthiness Limitation 78-AWL-02, Thrust Reverser Inner Wall, as specified in Boeing MPD Document, Section 9, AWLs and CMRs, D622W001-9, Revision dated October 2014. American Airlines stated the damage would likely have passed inspection because it did not indicate any heat discoloration, and other areas of disbonds or damage on the inner wall could be potentially missed after the incorporation of Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014, and AWL 78-AWL-02. We infer the commenter is requesting that we review AWL 78-AWL-02 to ensure that thermal damage on the inner wall is not missed.

We acknowledge the commenter's concern, and we might consider additional rulemaking to address that concern in the future. We contacted Boeing, and Boeing stated they are working with American Airlines to determine if a change needs to be made to the service information. However, until such additional action is identified, we consider it appropriate to proceed with issuance of this final rule to address the identified unsafe condition. We have not changed this final rule in this regard.

## **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously and minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the SNPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the SNPRM.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

## **Related Service Information under 1 CFR part 51**

We reviewed the following Boeing service information.

- Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010.

This service information describes procedures for a review of the airplane maintenance records to determine whether sealant was added to insulation blankets around compression pad fittings and the powered door opening system (PDOS) fitting; inspections of the T/R structure; and related investigative and corrective actions.

- Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014. This service information describes procedures for installing serviceable T/R halves.

- Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015; and Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013.

This service information describes, among other actions, procedures for inspections of the T/R structure, and related investigative and corrective actions, if necessary. Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013, also describes, for airplanes on which the actions specified in Boeing Special Attention

Service Bulletin 777-78-0071, dated November 29, 2009, have been done, procedures for installation of click bond covers and a bracket, a general visual inspection of the compression fitting for incorrect pin orientation, and related investigative and corrective actions, if necessary.

- Boeing 777 Maintenance Planning Data (MPD) Document, Section 9, Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D622W001 9, Revision dated November 2015. This service information provides required AWLs and CMRs for The Boeing Company Model 777 airplanes. The two AWLs specifically required by this AD are AWL 78-AWL-01, Thrust Reverser Thermal Protection System, which describes an inspection of the T/R thermal protection system on both engines; and AWL 78 AWL-02, which describes an inspection of the T/R inner wall.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

### **Costs of Compliance**

We estimate that this AD affects 55 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

<b>Estimated costs</b>					
<b>Action</b>	<b>Work hours</b>	<b>Average labor rate per hour</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Fleet cost</b>

Action	Work hours	Average labor rate per hour	Parts cost	Cost per product	Fleet cost
Actions per Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010	Up to 79 work-hours, per T/R half	\$85	\$0	Up to \$6,715 per T/R half	\$0 (No airplanes on the U.S. Register are in the configuration specified in Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010.)
Actions per Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013	Up to 48 work-hours, per T/R half	\$85	\$0	Up to \$4,080 per T/R half	Up to \$897,600 (4 T/R halves per airplane)
Inspections per Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015	Up to 39 work-hours, per T/R half	\$85	\$0	Up to \$3,315 per T/R half	\$0 (No airplanes on the U.S. Register are in the configuration specified in Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015.)
Maintenance or Inspection Program Revision	1 work-hour	\$85	\$0	\$85	\$4,675
T/R half installation per Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014	Up to 206 work-hours, per T/R half	\$85	<sup>[1]</sup> Up to \$400,651 per T/R half	Up to \$418,161 per T/R half	<sup>[2]</sup> Up to \$91,995,420 (4 T/R halves per airplane)

<sup>[1]</sup>The cost of parts is split into two major parts: (1) thermal protection system (TPS) blankets and (2) inner wall structure. The vast majority of the work associated with the TPS upgrade has already been completed. In addition, nearly half of the inner wall structure modification has already been done.

<sup>[2]</sup>The fleet cost estimate above is based on a general estimate for a given airplane with two engines having two T/R halves for each engine. Not all tasks required by this AD and specified in the service information would need to be done for a given T/R half. For a given TR half, it may only be necessary to accomplish certain actions or none for compliance, depending on its configuration status. We have no data to determine any given T/R half configuration to determine the cost for each T/R half to do the applicable actions for that T/R half. The majority of this cost has already been incurred.

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in this AD.

According to the manufacturer, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

#### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

#### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the

national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

#### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

#### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**2016-11-16 The Boeing Company:** Amendment 39-18543; Docket

No. FAA-2011-0027; Directorate Identifier 2010-NM-127-AD.

#### **(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

This AD affects AD 2005-07-24, Amendment 39-14049 (70 FR 18285, April 11, 2005).

**(c) Applicability**

This AD applies to The Boeing Company Model 777-200 and -300 series airplanes, certificated in any category, equipped with Rolls-Royce Model RB211-Trent 800 engines.

**(d) Subject**

Air Transport Association (ATA) of America Code 78, Engine exhaust.

**(e) Unsafe Condition**

This AD was prompted by reports of thrust reverser (T/R) events related to thermal damage of the T/R inner wall. We are issuing this AD to detect and correct a degraded T/R inner wall panel. A degraded T/R inner wall panel could lead to failure of the T/R and adjacent components and their consequent separation from the airplane, which could result in a rejected takeoff (RTO) and cause asymmetric thrust and consequent loss of control of the airplane during reverse thrust operation. If a T/R inner wall overheats, separated components could cause structural damage to the airplane, damage to other airplanes, or possible injury to people on the ground.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Records Review, Inspections, and Related Investigative and Corrective Actions for Airplanes with Pre-Thermal Protection System (TPS) Insulation Blankets (Part Numbers (P/Ns) 315W5113-(XX) and 315W5010-(XX)) Installed**

For airplanes with pre-TPS insulation blankets, P/Ns 315W5113-(XX) and 315W5010-(XX): Except as required by paragraphs (h)(1), (h)(2), (h)(3), and (h)(4) of this AD, at the applicable time in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010, review the airplane maintenance

records to determine whether sealant was added to insulation blankets around the compression pad fittings and the powered door opening system (PDOS) fitting; do the applicable actions specified in paragraphs (g)(1), (g)(2), (g)(3), (g)(4), (g)(5), and (g)(6) of this AD; and do all applicable related investigative and corrective actions; in accordance with the applicable work packages of the Accomplishment Instructions of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010, except as required by paragraph (h)(5) of this AD. Do all applicable related investigative and corrective actions before further flight. Repeat the applicable inspections, replacement, and installations required by paragraphs (g)(1), (g)(2), (g)(3), (g)(4), (g)(5), and (g)(6) of this AD thereafter at the applicable intervals specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010.

(1) Do a detailed inspection of all T/R inner wall insulation blanket edges, grommet holes, penetrations, and seams for sealant that is cracked, has gaps, is loose, or is missing; do a general visual inspection of click bond studs, blanket studs, and temporary fasteners; and replace sealant as applicable.

(2) Do the actions specified by either paragraph (g)(2)(i) or (g)(2)(ii) of this AD.

(i) Do a full inner wall panel nondestructive test (NDT) inspection for delamination and disbonding of each T/R half, and do a general visual inspection for areas of thermal degradation.

(ii) Do a limited area NDT inspection of the inner wall panel of each T/R half for delamination and disbonding, and do a general visual inspection for areas of thermal degradation.

(3) Do a general visual inspection of the T/R perforated wall aft of the intermediate pressure compressor 8<sup>th</sup> stage (IP8) and the high pressure compressor 3<sup>rd</sup> stage (HP3) bleed port exits for a color that is different from that of the general area.

(4) Do a detailed inspection of the PDOS lug bushings on the upper number 1 compression pad fittings to detect hole elongation, deformation, and contact with the PDOS actuator; and install a PDOS actuator rod and sealant.

(5) Do an NDT inspection for unsatisfactory number 1 upper and numbers 1 and 2 lower compression pad fittings.

(6) Install and seal insulation blankets.

**(h) Exceptions to Specifications of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010**

(1) Where paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010, specifies a compliance time “after the date on the original issue of this service bulletin,” this AD requires compliance within the specified compliance time after the effective date of this AD.

(2) Where table 2 of paragraph 1.E., “Compliance,” in Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010, specifies a compliance time of “2,000 flight cycles after the date of the operator’s own inspections,” for doing Work Packages 2 and 5, or Work Packages 5 and 6, this AD requires compliance within 2,000 flight cycles after the date of the operator’s own inspections, or within 12 months after the effective date of this AD, whichever occurs later.

(3) Where the Condition column in table 2 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010, refers to a T/R half that has or has not been inspected before “the date on this service bulletin,” this AD requires compliance for each corresponding T/R half that has or has not been inspected before the effective date of this AD.

(4) Where the Condition column in tables 2 and 3 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6,

2010, refers to “total flight cycles,” this AD applies to each T/R half with the specified total flight cycles as of the effective date of this AD.

(5) Where Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010, specifies to contact Boeing for appropriate action: Before further flight, repair using a method approved in accordance with the procedures specified in paragraph (r) of this AD.

**(i) Repetitive NDT and Additional Inspections for Airplanes with TPS Insulation Blankets (P/N 315W5115-(XX)) Installed**

For airplanes with TPS insulation blankets, P/N 315W5115-(XX): Within 2,000 flight cycles after doing any NDT inspection specified in Boeing Special Attention Service Bulletin 777-78-0071; or within 2,000 flight cycles after doing any NDT inspection specified in Boeing Service Bulletin 777-78-0082; or within 30 days after the effective date of this AD; whichever occurs latest; do the inspections specified in paragraphs (i)(1) and (i)(2) of this AD, and do all applicable related investigative and corrective actions, in accordance with the Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013, or in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015, as applicable; except as required by paragraph (m) of this AD. Do all applicable related investigative and corrective actions before further flight. Repeat the inspections specified in paragraphs (i)(1) and (i)(2) of this AD thereafter at the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013; or Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015; as applicable.

(1) Do an NDT inspection of the full T/R inner wall panel for delaminations and disbonds.

(2) Do a detailed inspection of the perforated side of the T/R inner wall aft of the IP8 and the HP3 bleed port exits for color that is different from the normal T/R perforated wall color.

**(j) Concurrent Requirements for Paragraph (i) of this AD**

For airplanes with TPS insulation blankets, P/N 315W5115-(XX), on which any action specified in Boeing Special Attention Service Bulletin 777-78-0071 have been done but the actions specified in paragraphs (j)(1) and (j)(2) of this AD have not been done: Prior to or concurrently with doing the inspection required by paragraph (i) of this AD, do the actions specified in paragraphs (j)(1) and (j)(2) of this AD, in accordance with the Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013, except as required by paragraph (m) of this AD.

(1) Install click bond covers and bracket and replace the washers.

(2) Do a detailed inspection of the compression fitting for incorrect pin orientation, and do all applicable related investigative and corrective actions. Do all applicable related investigative and corrective actions before further flight.

**(k) Repetitive Electronic Engine Control (EEC) Wire Bundle Inspections for Airplanes with TPS Insulation Blankets (P/N 315W5115-(XX)) Installed**

For airplanes with TPS insulation blankets, P/N 315W5115-(XX): Do the inspections specified in paragraphs (k)(1) or (k)(2) of this AD, as applicable.

(1) For airplanes on which any inspection specified in Boeing Special Attention Service Bulletin 777-78-0071 has been done: Within 2,000 flight hours after doing a detailed inspection of the EEC wire bundles and clips as specified in Boeing Special Attention Service Bulletin 777-78-0071, or within 500 flight hours after the effective date of this AD, whichever occurs later; do a detailed inspection of the EEC wire bundles and clips for damage, and do all applicable corrective actions, in accordance with the

Accomplishment Instructions of Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013, except as required by paragraph (m) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection thereafter at the applicable time specified in table 5 of paragraph 1.E., "Compliance," of Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013.

(2) For airplanes on which any inspection specified in Boeing Service Bulletin 777-78-0082, has been done: Within 2,000 flight hours after doing a detailed inspection of the EEC wire bundles and clips as specified in Boeing Special Attention Service Bulletin 777-78-0082, or within 500 flight hours after the effective date of this AD, whichever occurs later; do a detailed inspection for damage of the EEC wire bundles and clips, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015, except as required by paragraph (m) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection thereafter at the applicable time specified in table 5 of paragraph 1.E., "Compliance," of Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015.

**(l) T/R Inner Wall Installation**

Within 48 months after the effective date of this AD: Install serviceable T/R halves, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014, except as required by paragraph (m) of this AD. The definition of a serviceable T/R half is specified in Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014. Accomplishing the installation specified in this paragraph and the revision to the maintenance or inspection program required by paragraph (n) of this AD terminates the actions required by paragraphs (g), (i), (j), and (k) of this AD.

**(m) Exceptions to Service Information Specified in Paragraphs (i), (j), (k), and (l) of this AD**

Where Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014; Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015; and Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013; specify to contact Boeing for appropriate action: Before further flight, repair using a method approved in accordance with the procedures specified in paragraph (r) of this AD.

**(n) Revise the Maintenance or Inspection Program**

Within 30 days after the effective date of this AD, revise the maintenance or inspection program, as applicable, to incorporate Airworthiness Limitations 78-AWL-01, Thrust Reverser Thermal Protection System; and 78-AWL-02, Thrust Reverser Inner Wall; as specified in Boeing 777 Maintenance Planning Data (MPD) Document, Section 9, Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D622W001-9, Revision dated November 2015. The initial compliance times for AWLs 78-AWL-01, Thrust Reverser Thermal Protection System, and 78-AWL-02, Thrust Reverser Inner Wall, as specified in Boeing 777 MPD Document, Section 9, AWLs and CMRs, D622W001-9, Revision dated November 2015, are at the applicable time specified in paragraph (n)(1) or (n)(2) of this AD.

(1) For airplanes on which any inspections required by paragraph (i) of this AD are done: Concurrent with the next inspection required by paragraph (i) of this AD, or within 30 days after the effective date of this AD, whichever occurs later.

(2) For airplanes on which the installation required by paragraph (l) of this AD is done: At the later of the times specified in paragraph (n)(2)(i) and (n)(2)(ii) of this AD.

(i) Within 1,125 days or 6,000 flight cycles, whichever occurs first after accomplishing the installation required by paragraph (l) of this AD.

(ii) Within 30 days after the effective date of this AD.

**(o) No Alternative Actions or Intervals**

After the maintenance or inspection program, as applicable, has been revised as required by paragraph (n) of this AD, no alternative actions (e.g., inspections) or intervals may be used unless the actions or intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (r) of this AD.

**(p) Credit for Previous Actions**

(1) This paragraph provides credit for the actions specified in paragraph (g) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 777-78A0065, dated June 23, 2008; or Boeing Alert Service Bulletin 777-78A0065, Revision 1, dated January 29, 2009. This service information is not incorporated by reference in this AD.

(2) This paragraph provides credit for the actions specified in paragraph (i) of this AD, if those actions were performed before the effective date of this AD using any service information specified in paragraphs (p)(2)(i), (p)(2)(ii), and (p)(2)(iii) of this AD. This service information is not incorporated by reference in this AD.

(i) Boeing Service Bulletin 777-78-0082, dated November 9, 2011.

(ii) Boeing Special Attention Service Bulletin 777-78-0071, dated November 25, 2009.

(iii) Boeing Special Attention Service Bulletin 777-78-0071, Revision 1, dated September 8, 2010.

(3) This paragraph provides credit for the actions specified in paragraph (j) of this AD, if those actions were performed before the effective date of this AD using Boeing Special Attention Service Bulletin 777-78-0071, Revision 1, dated September 8, 2010. This service information is not incorporated by reference in this AD.

(4) This paragraph provides credit for the actions specified in paragraph (k)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Service Bulletin 777-78-0082, dated November 9, 2011. This service information is not incorporated by reference in this AD.

(5) This paragraph provides credit for the actions specified in paragraph (n) of this AD, if those actions were performed before the effective date of this AD using Boeing 777 MPD Document, Section 9, AWLs and CMRs, D622W001-9, Revision dated October 2014. This service information is not incorporated by reference in this AD.

**(q) Terminating Action for AD 2005-07-24, Amendment 39-14049 (70 FR 18285, April 11, 2005)**

Accomplishing the actions specified in paragraph (q)(1), (q)(2), or (q)(3) of this AD terminates the actions required by paragraphs (f), (g), and (h) of AD 2005-07-24, Amendment 39-14049 (70 FR 18285, April 11, 2005).

(1) The actions required by paragraph (g) of this AD.

(2) The inspections required by paragraphs (i) and (k) of this AD, and, as applicable, the actions required by paragraph (j) of this AD.

(3) The installation specified in paragraph (l) of this AD.

**(r) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (s)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(s) Related Information**

(1) For more information about this AD, contact Kevin Nguyen, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle ACO, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6501; fax: 425-917-6590; email: kevin.nguyen@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (t)(3) and (t)(4) of this AD.

**(t) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Alert Service Bulletin 777-78A0065, Revision 2, dated May 6, 2010.

(ii) Boeing Alert Service Bulletin 777-78A0094, dated July 29, 2014.

(iii) Boeing Service Bulletin 777-78-0082, Revision 1, dated June 15, 2015.

(iv) Boeing Special Attention Service Bulletin 777-78-0071, Revision 2, dated July 23, 2013.

(v) Boeing 777 Maintenance Planning Data (MPD) Document, Section 9, Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D622W001-9, Revision dated November 2015.

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone: 206-544-5000, extension 1; fax: 206-766-5680; Internet: <https://www.myboeingfleet.com>.

(4) You may view this service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Renton, Washington, on May 20, 2016.

Victor Wicklund, Acting Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.

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